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**Neutral Particle Studies in the HSX Stellarator** L. STEPHEY, A. BRIESEMEISTER, D.T. ANDERSON, J.N. TALMADGE, F.S.B. ANDERSON, University of Wisconsin, Madison — Previously in the HSX stellarator, fully 3-D DEGAS [1] simulations at B=0.5 T operation have calculated neutral profiles for several plasma configurations [2]. DEGAS 2 [3] will be used to calculate fully 3-D neutral particle profiles for B=1.0 T plasmas. DEGAS 2 calculations presented will use data from an array of absolutely calibrated H-alpha detectors currently installed on HSX. The H-alpha system is being upgraded to provide better resolution of the poloidal distribution of neutrals. The results from DEGAS 2 and the upgraded H-alpha system will be used to help understand differences in plasma behavior as a result of fueling location relative to heating location. B=1.0 T particle flux calculations will be presented in both the quasi-symmetric configuration and when symmetry is intentionally degraded to simulate a conventional stellarator. These results will be compared to neoclassical calculations. *Supported by DOE grant DE-FG02-93ER54222.

[1] D. Heifetz et al., J. Comp. Phys. 46, 309 (1982).
[2] J.M. Canik et al., Phys. Plasmas 14, 056107 (2007).
[3] D.P. Stotler et al., J. Nucl. Mater. 967, 290–293 (2001).

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